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Brucellosis related to exposure with camels

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Abstract

Objective: To describe clinical and epidemiological characteristics of patients confirmed with brucellosis in the Cuban Hospital (Qatar) during 2014 to June 2016.

Methods: Clinical and laboratory data were collected from the medical records of 41 confirmed cases of Brucellosis.

Results: Patients were from six nationalities, predominantly Qatari (56.1%). Fever of prolonged course (85.7%), muscle and joint pain were the most common symptoms. 61% of patients had high titers in serology for *Brucella melitensis* or *abortus*, while 12.2% and 14.6% had positive blood culture and serology. The predominance of high figures for liver enzymes (AST and ALT) and Protein C-reactive were observed.

Conclusion: The clinical and epidemiological characteristics would be a reference for clinicians and especially when provides care to patients from countries with active transmission of the disease

Keywords

Brucellosis; Human; *Brucella* spp.; Qatar.

Introduction

Brucellosis is a zoonosis transmitted to humans through contact with fluids of infected animals (sheep, cattle, goats, camels, or other animals) or foods products such as unpasteurized milk and cheese. It is one of the most widespread zoonoses in the world [1]. Brucellosis has a high morbidity, both for humans and animals; and it is a major cause of economic losses and public health problems in many developing countries [2]. The prevalence of brucellosis has been increasing due to the international migration and the dynamic of human populations; however, the incidence in the eastern area of Saudi Arabia decreased according to the report from 1983 to 2007 [3].

Qatar is a non-endemic area for Brucellosis with a low incidence compared to the neighboring countries [4]. A decreasing trend in incidence was reported between 2004-2012, with the highest figures in 2006 (4.2 cases per 100,000 inhabitants) [5].

The Cuban Hospital in Qatar serves an area of population in the western part of the country, where the largest populations of camels and rams are found. We aim to describe clinical and epidemiological characteristics of patients with Brucellosis attended in a community hospital in Qatar.

Methods

A descriptive study of case series of brucellosis reported in the Cuban Hospital in Qatar during the years 2014 to June 2016.

The cases were confirmed using the clinical and laboratory criteria, which included:

- **Clinical criteria:** fever of acute onset or prolonged course associated with night sweats, arthralgia, headache, fatigue, anorexia, myalgia, weight loss, arthritis or spondylitis, and may include focalization symptoms (e.g. meningeal, hepatic, others).
- **Laboratory criteria:** culture and identification of *Brucella* species in clinical samples, the titre of antibodies greater than or equal to 160 in standard agglutination test in tubes for *Brucella* species. In addition, the presence of IgM antibodies was determined by ELISA. All the diagnostic tests were performed in accredited corporate laboratories [6,7].

The following information was collected from the patient's medical records: demographic data, clinical picture, liver enzymes results, C-reactive protein, cultures of clinical samples and serological test. The laboratory tests were performed using the following methods: Alanine Aminotransferase (ALT/TGP) and Aspartate Aminotransferase (AST/TGO) by

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kinetic methods (Abbot architect) with reference values (VR) according to age and sex, C-reactive protein by immunoturbidimetric assay (Abbot architect) (vr. <5 mg/L), quantitative tube agglutination test for *Brucella* spp. antibodies (vr. ≥ 1:80) and detection of IgM and IgG antibodies for *brucella* spp. by ELISA.

The data were analyzed using the statistical technique of frequency distribution analysis.

Results

We report 41 patients confirmed with *Brucella* spp. from six nationalities of which 56.1% were Qatari nationals [Figure 1]. The patients were of male sex (90.2%) and average age 32.8 years (minimum 5 years, maximum 72 years). The 25% of the patients were under 15 years old. Most of the patients had earlier contact with camels, especially the ingestion of raw milk, and less frequent contact with rams.

A prolonged course of fever (85.7%), muscle and joint pains were the most frequent clinical symptoms observed, with lower frequencies for others symptoms presented in figure 2. The 61% of patients were confirmed by positive blood culture and positive *Brucella* serology. In 12.2% and 14.6% had positive blood culture and serology respectively were used to confirm the diagnosis. In 37 patients, the existence of co-infection of *Brucella melitensis* and *Brucella abortus* was demonstrated by serology [Table 1]. In a patient with liver cirrhosis of unknown etiology, *Brucella* spp. in peritoneal fluid, in addition to blood culture was the confirmatory test.

The median of AST was 57 U/L with 75% of the patients had high figures, while for the ALT the median was 46 U/L, more than 50% the patients had high figures. For C-reactive protein, the median was 35 mg/L, with high figures in more than 75% of patients [Figure 3].

Discussion

Brucellosis is the most frequent zoonoses in Qatar and is endemic in countries of the Mediterranean region and the Middle East. The main source of infection in these countries are rams and camels, with *B. melitensis* and *B. abortus* being the most reported in different published studies [8,9]. Also, the main source of exposure is through the ingestion of raw camel milk, which was described in an outbreak of the disease in the country, where cultural issues promote the consumption of raw camel milk instead its consumption

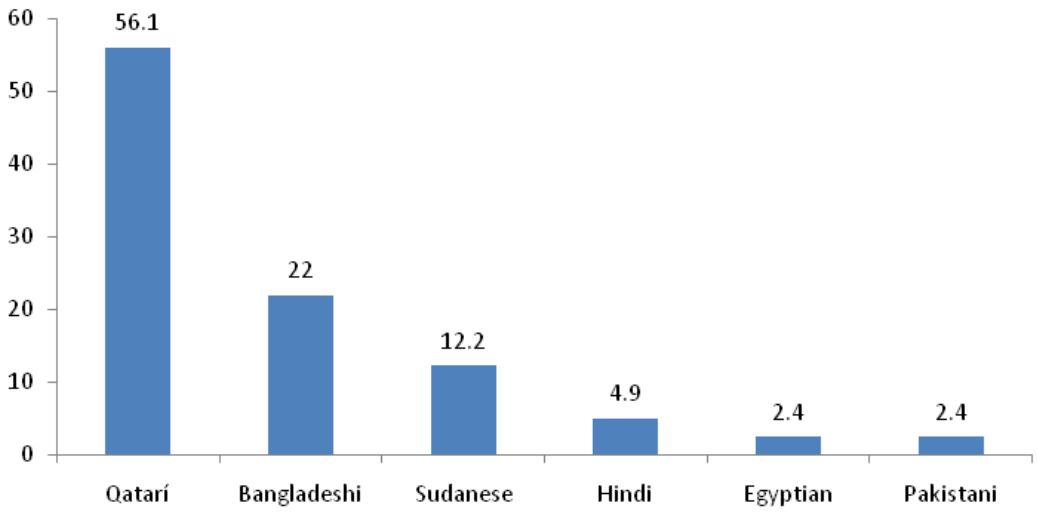

Figure 1: Proportion of patients according nationality

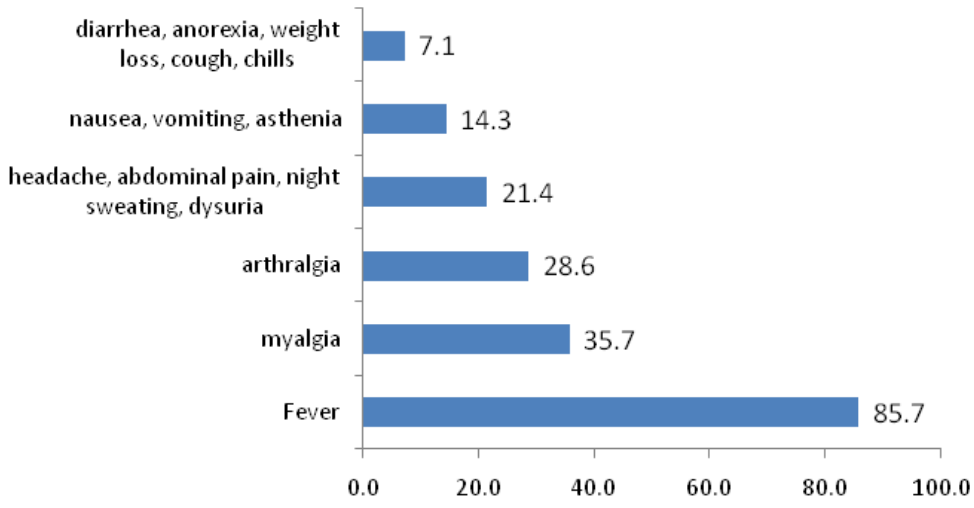

Figure 2: Proportion of patients according clinical symptoms at diagnosis

Patient	sex	Age (years)	Blood culture	serology	Antibody titer		Brucella IgM
					B. abortus	*B. miletensis*	
1	M	60		positive	640		
2	M	18	positive	positive	640	1280	positive
3	F	72	positive	positive	1280	640	
4	M	49	positive	positive	640		
5	M	39	positive				
6	M	45		positive	1280	640	positive
7	M	15	positive	positive	1280	1280	
8	M	37	positive	positive	640	640	positive
9	M	10	positive	positive	1280	1280	positive
10	M		positive	positive	1280	1280	
11	M	8	positive	positive	1280	1280	positive
12	M	23	positive				
13	M	6	positive	positive	640	1280	
14	M	26	positive	positive	640	320	positive
15	M	7	positive	positive	640	640	positive
16	F	14		positive	640	1280	positive
17	M	9	positive	positive	320	640	
18	M	10		positive	1280	1280	
19	M	5	positive				
20	M	6	positive				
21	M	29		positive	640	640	
22	M	30	positive	positive	1280	1280	positive
23	M	22	positive	positive	2560	2560	positive
24	M	42	positive	positive	640	640	positive
25	M	51		positive	1280	320	positive
26	M	53		positive	160	160	positive
27	M	49	positive	positive	640	640	negative
28	M	66	positive	positive	1280	320	positive
29	M	30	positive	positive	320	320	positive
30	M	52	positive	positive	1280	1280	positive
31	M	39		positive	640	320	positive
32	M	34	positive	positive	2560	2560	positive
33	M	33	positive	positive	1280	1280	positive
34	F	52		positive	1280	1280	positive
35	M	34		positive	640	640	positive
36	M	35	positive	positive	1280	1280	positive
37	M	27	positive	positive	5120	5120	positive
38	M	40	positive				
39	F	62		positive	640	640	positive
40	M	31	positive	positive	1280	1280	positive
41	M	42	positive	positive	1280	1280	positive

Table 1: Description of demographics and laboratory test results in cases confirmed with brucelosis.

after boiling [10]. The slaughter of animals for human consumption or the performance of deliveries are additional sources of infections. It explains some of the cases in this study described since the patients (mainly non-Qatari nationals) are dedicated to animal care in areas located in western Qatar.

The main clinical symptoms were fever, myalgia, and arthralgia; however, it is worth remembering that the disease has a clinical expression that includes uncomplicated and complicated forms [6]. In the case series, only one complicated case was detected when *Brucella* spp. was found in peritoneal fluid in a patient with liver cirrhosis. Previous reports had described cases of primary peritonitis due to *Brucella* spp. in patients with previous liver cirrhosis [11].

The high figures of liver enzymes and C-reactive protein are very frequent laboratory findings in patients with Brucellosis, even though it depends on the clinical stage of the disease. The level of liver enzymes depends on the degree of severity of the disease, which can range from few clinical symptoms and mild liver involvement to definitive acute hepatitis [6]. The description of this series of cases of Brucellosis diagnosed in Qatar is a valuable reference for clinicians in general, and especially for those who care patients from endemic countries or with active transmission of the disease.

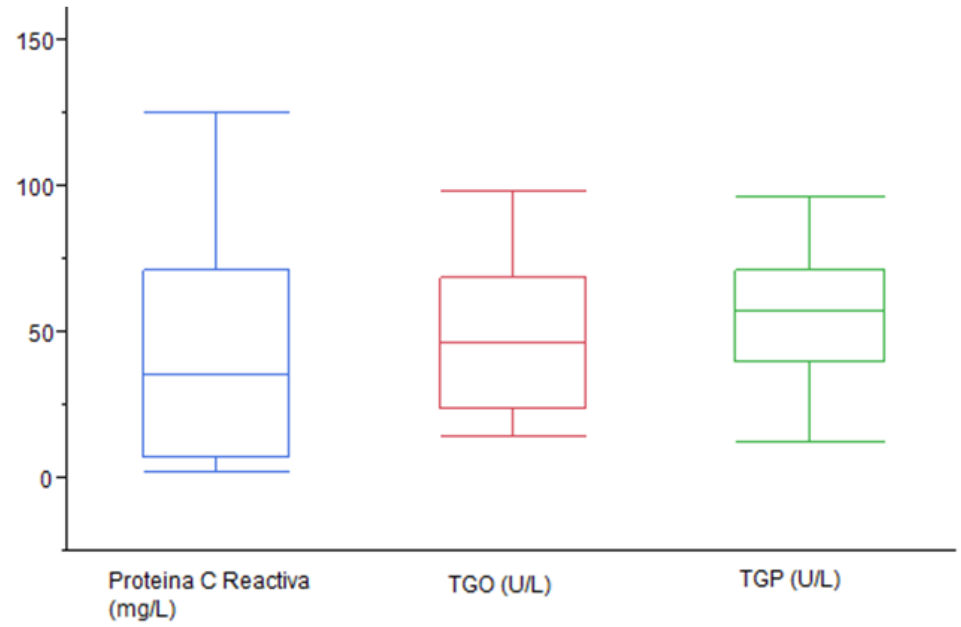

Figure 3: Box plot for selected laboratory test.

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